

IN THE CLAIM:

Please cancel claim 32 without prejudice or disclaimer of the subject matter recited therein.

Please amend claims 1-31 and 33-37 as follows:

1. (Currently Amended) A handover method between two radio systems with different physical traffic channels and different radio link protocols comprising retransmission mechanisms, the method comprising a step of:

handing over a non-transparent call from a traffic channel of ~~the~~ an old radio system to a traffic channel of ~~the~~ a new radio system,

~~characterized in that~~ wherein the method comprises further steps of:

retaining the radio link protocol of the old radio system between a mobile station and an interworking function, and

transmitting ~~the~~ radio link protocol frames of the old radio system adapted to the traffic channel of the new radio system.

2. (Currently Amended) A The method according to claim 1, ~~characterized in that~~ wherein the length of the radio link protocol frames of the old radio system equals ~~the~~ length of the radio link protocol frames of the new radio system, and that said ~~adaptation~~ transmitting step comprises a step of:

inserting the radio link protocol frames of the old radio system as such into protocol data units of a lower protocol layer on the traffic channel of the new radio system in place of the radio link protocol frames of the new radio link protocol.

3. (Currently Amended) A The method according to claim 1, ~~characterized in that~~ wherein the radio link protocol frames of the old radio system are longer than the radio link protocol frames of the new radio system, and that said ~~adaptation~~ transmitting step comprises steps of:

splitting the radio link protocol frames of the old radio system into data blocks;

inserting said data blocks into the protocol data units of the lower protocol layer on the traffic channel of the new radio system in place of the radio link protocol frames of the new radio link protocol.

4. (Currently Amended) A The method according to claim 3, ~~characterized by~~ wherein the inserting step comprises:

inserting filler into one or several data blocks ~~if~~ when the length of the radio link protocol frame in the old radio system is different from a multiple of the length of the radio link protocol frame in the new radio system.

5. (Currently Amended) A The method according to claim 1, ~~characterized in that~~ wherein the radio link protocol frames of the old radio

system are shorter than the radio link protocol frames of the new radio system, and that said ~~adaptation~~ transmitting step comprises steps of:

concatenating the radio link protocol frames of the old radio system;

forming from the concatenated radio link protocol frames data blocks the length of which equals the length of the radio link protocol frames of the new radio system; and

inserting said data blocks into the protocol data units of the lower protocol layer on the traffic channel of the new radio system in place of the radio link protocol frames of the new radio link protocol.

6. (Currently Amended) A The method according to claim 5, ~~characterized by~~ wherein the inserting step comprises:

inserting filler into one or several data blocks if the length of the radio link protocol frame in the new radio system is different from a multiple of the length of the radio link protocol frame in the old radio system.

7. (Currently Amended) A The method according to claim 5, ~~characterized by~~ wherein the inserting step comprises:

inserting into each data block one or more complete radio link protocol frames and a part of a radio link protocol frame in a concatenated form, if the length of the radio link protocol frame in the new radio system is different from a multiple of the length of the radio link protocol frame in the old radio system.

8. (Currently Amended) A The method according to claim 1, ~~characterized in that~~ wherein said ~~adaptation~~ transmitting step comprises steps of:

setting up the radio link protocol of the new radio system between the mobile station and the interworking function; and

transmitting the radio link protocol frames of the old radio system transparently within the radio link protocol of the new radio system without using ~~the~~ a retransmission mechanism of the latter.

9. (Currently Amended) A The method according to claim 8, ~~characterized in that~~ wherein said ~~transmission~~ transmitting step comprises steps of:

inserting the radio link protocol frames of the old radio system into the payload field of the radio link protocol frames of the new radio system at ~~the~~ a transmitting end;

transmitting the radio link protocol frames of the new radio system from the transmitting end to ~~the~~ a receiving end without using the retransmission mechanism;

synchronizing the receiving end with the radio link protocol frames of the new radio system;

extracting the radio link protocol frames of the old radio system from the payload field of a radio link protocol frames of the new radio system; and

operating with the extracted radio link protocol frames according to the radio link protocol and retransmission mechanism of the old radio system.

10. (Currently Amended) A The method according to claim 8, ~~characterized by~~ further comprising a step of:

performing a handover from the traffic channel of the new radio system back to the traffic channel of the old radio system, and wherein the retaining step comprises retaining the radio link protocol of the old radio system in the mobile station and in the interworking function.

11. (Currently Amended) A The method according to claim 1, ~~characterized in that~~ wherein the new and the old radio system are separate mobile communication systems or different radio access networks of the same mobile system.

12. (Currently Amended) A dual-mode mobile station (MS) with capacity to operate between two radio systems with different physical traffic channels and different radio link protocols (~~LAC, RLP~~) comprising retransmission mechanisms, the mobile station (MS) comprising:

adapter means (~~TAF~~) for establishing a first radio link protocol in a non-transparent call between the mobile station and an interworking function in a first radio

system, and a second radio link protocol between the mobile station and the interworking function in a second radio system; and

means for performing a handover for the non-transparent call from a traffic channel of the first radio system to a traffic channel of the second radio system and vice versa,

wherein, in the station, ~~characterized in that~~

said adapter means (TAF) ~~are~~ is arranged to retain ~~the~~ a radio link protocol of ~~the~~ an old radio system between the mobile station and the interworking function in a handover that is carried out from the traffic channel of the first radio system to the traffic channel of the second radio system, or vice versa, and

said adapter means (TAF) ~~are~~ is arranged to transmit the radio link protocol frames of the old radio system adapted to the traffic channel of the new radio system.

13. (Currently Amended) A The mobile station according to claim 12, ~~characterized in that~~ wherein said adapter means (TAF) ~~are~~ is arranged to insert the radio link protocol frames (~~LAC~~) of the old radio system into protocol data units of a lower protocol layer on the traffic channel of the new radio system in place of the radio link protocol frames of the new radio link protocol (~~RLP~~) either as such, or split into data blocks or concatenated into data blocks, depending on whether the length of the radio link protocol frames of the radio system is equal to, longer than or correspondingly shorter than the length of the radio link protocol frames of the new radio system.

14. (Currently Amended) A The mobile station according to claim 12, ~~characterized in that~~ wherein said adapter means (TAF) ~~are~~ is also arranged to set up the radio link protocol of the new radio system between the mobile station and the interworking function, and to transmit the radio link protocol frames (LAC) of the old radio system transparently within the radio link protocol (RLP) of the new radio system without using ~~the~~ a retransmission mechanism of the latter.

15. (Currently Amended) A The mobile station according to claim 14, ~~characterized in that~~ wherein said adapter means (TAF) ~~are~~ is arranged to transmit the radio link protocol frames (LAC) of the old radio system transparently in ~~the~~ a payload field of the radio link protocol frames (RLP) of the new radio system.

16. (Currently Amended) A The mobile station according to claim 12, ~~characterized in that~~ wherein said adapter means ~~are~~ is arranged to retain the radio link protocol (LAC) of the old radio system in the mobile station and in the interworking function if a handover is later carried out from the traffic channel of the new radio system back to the traffic channel of the old radio system.

17. (Currently Amended) A telecommunication system comprising an arrangement for performing a handover between two radio systems with different

physical traffic channels and different radio link protocols (~~LAC, RLP~~), ~~characterized in that~~ wherein a mobile station (MS) and an interworking function (IWF) are arranged to retain the radio link protocol of the an old radio system when a handover for a non-transparent call is carried out from a traffic channel of the old radio system to a traffic channel of the a new radio system, and to transmit the radio link protocol frames of the old radio system adapted to the traffic channel of the new radio system.

18. (Currently Amended) A The telecommunication system according to claim 17, ~~characterized in that~~ wherein the mobile station (MS) and the interworking function (IWF) are arranged to insert the radio link protocol frames of the old radio system into protocol data units of a lower protocol layer on the traffic channel of the new radio system in place of the radio link protocol frames of the new radio link protocol either as such, or split into data blocks or concatenated into data blocks, depending on whether the length of the radio link protocol frames of the radio system is equal to, longer than or correspondingly shorter than the length of the radio link protocol frames of the new radio system.

19. (Currently Amended) A The telecommunication system according to claim 17, ~~characterized~~ characterized in that the mobile station (MS) and the interworking function (IWF) are also arranged to set up the radio link protocol of the new radio system between the mobile station and the interworking function, and to transmit

the radio link protocol frames of the old radio system transparently within the radio link protocol of the new radio system without using the retransmission mechanism of the latter.

20. (Currently Amended) A The telecommunication system according to claim 19, ~~characterized in that~~ wherein said adapter means ~~are~~ is arranged to transmit the radio link protocol frames of the old radio system transparently in ~~the~~ a payload field of the radio link protocol frames of the new radio system.

21. (Currently Amended) A The telecommunication system according to claim 17, ~~characterized in that~~ wherein the old and the new radio system are separate mobile communication system or different radio access networks of the same mobile system.

22. (Currently Amended) A handover method in a telecommunication system where a mobile station is able to use as an access network a wired access network or a radio access network with different link protocols for non-transparent calls, the method comprising a step of:

handing over a non-transparent call from a the wired access network to a the radio access network, or vice versa,

~~characterized in that~~ wherein the method comprises further steps of:

retaining the a link protocol of the an old access network between the mobile station and the an interworking function, and

transmitting the link protocol frames of the old access network adapted to the a transmission path of the a new access network.

23. (Currently Amended) A telecommunication system where a mobile station is able to use as an access network a wired access network or a radio access network with different link protocols for non-transparent calls, the system comprising an arrangement for performing a handover between the wired access network and the radio access network or between two wired access networks, ~~characterized in that~~ wherein the mobile station and an interworking function are arranged to retain the a link protocol of the an old access network when a handover for a non-transparent call is carried out from the wired access network to the radio access network or vice versa, and to transmit the link protocol frames of the old access network adapted to the transmission path of the a new access network.

24. (Currently Amended) A dual-mode mobile station with ability to use a wired access network as the access network, or comprising different link protocols for non-transparent calls, the mobile station comprising:

adapter means for forming a first link protocol in a non-transparent call between the mobile station and an interworking function in a radio access network, and a second

link protocol between the mobile station and an interworking function in a wired access network; and

means for performing a handover for a non-transparent call from the wired access network to the radio access network and vice versa, or over a wired connection from the access network,

~~characterized in that~~ wherein said adapter means ~~are~~ is arranged to retain the a link protocol of the an old access network between the mobile station and the interworking function in a handover carried out from one wired access network to another, and

said adapter means ~~are~~ is arranged to transmit the link protocol frames of the old access network adapted to the a transmission path of the new access network.

25. (Currently Amended) A handover method in a telecommunication system where a terminal equipment is able to use as an access network two wired access networks with different link protocols for non-transparent calls, the method comprising:

handing over a non-transparent call from one wired access network to another,

~~characterized in that~~ wherein the method comprises further steps of retaining the an link protocol of the old access network between the terminal equipment and the an interworking function, and

transmitting the link protocol frames of the old access network adapted to the transmission path of the a new access network.

26. (Currently Amended) A telecommunication system where a terminal equipment is able to use as an access network two wired access networks with different link protocols for non-transparent calls, the system comprising an arrangement for performing a handover between said two wired access networks, ~~characterized in that~~ wherein the terminal equipment and the an interworking function are arranged to retain ~~the~~ a link protocol of ~~the~~ an old access network when a handover for a non-transparent call is carried out from one wired access network to another, and to transmit ~~the~~ link protocol frames of the old access network adapted to the transmission path of ~~the~~ a new access network.

27. (Currently Amended) A dual-mode terminal equipment with ability to use as an access network two wired access networks with different link protocols for non-transparent calls, the mobile station comprising:

adapter means for forming a first link protocol in a non-transparent call between the terminal equipment and an interworking function in the first wired access network, and a second link protocol between the terminal equipment and an interworking function in the second wired access network; and

means for performing a handover for a non-transparent call from one wired access network to another,

~~characterized in that~~ wherein

said adapter means ~~are~~ is arranged to retain the link protocol of ~~the~~ an old access network between the terminal equipment and the interworking function in a handover carried out from one wired access network to another, and

said adapter means ~~are~~ is arranged to transmit ~~the~~ link protocol frames of the old access network adapted to the transmission path of ~~the~~ a new access network.

28. (Currently Amended) A data transmission method in a mobile communication system comprising a network element ~~mobile services switching centre~~ with a first link protocol provided with a retransmission mechanism for non-transparent data transmission; a radio access network with a second link protocol provided with a retransmission mechanism for non-transparent data transmission; and an interworking unit via which the radio access network is connected to the network element ~~mobile services switching centre~~, the method comprising steps of:

setting up the first link protocol from end to end between the mobile station and the network element;

transmitting data in the frames of the first link protocol between the interworking unit and the network element ~~mobile services switching centre~~;

using frame numbering in said retransmission mechanism between the interworking unit and the network element ~~mobile services switching centre~~; and

~~characterized by~~

adapting the first link protocol in the interworking unit to the radio access network so that the retransmission of data is controlled from end to end between the network element ~~mobile services switching centre~~ and the mobile station by means of said frame numbering, and

said transmitting step comprising transmitting the frames of the first link protocol between the network element and the mobile station adapted to the traffic channel of the new radio system, such that said first link protocol is applied from end to end between the mobile station and the network element.

29. (Currently Amended) A data transmission method ~~according to claim 28,~~ ~~characterized by~~ in a mobile communication system comprising a network element with a first link protocol provided with a retransmission mechanism for non-transparent data transmission; a radio access network with a second link protocol provided with a retransmission mechanism for non-transparent data transmission; and an interworking unit via which the radio access network is connected to the mobile services switching center, the method comprising steps of:

transmitting data in the frames of the first link protocol between the interworking unit and the network element;

using frame numbering in said retransmission mechanism between the interworking unit and the network element;

adapting the first link protocol in the interworking unit to the radio access network so that the retransmission of data is controlled from end to end between the network element and the mobile station by means of said frame numbering; and

negotiating, during the set-up of the connection between the mobile station and the network element ~~mobile services switching centre~~, the manner in which the first link protocol is adapted to the radio access network.

30. (Currently Amended) A The method according to claim 29, ~~characterized in that~~ wherein said ~~negotiation~~ negotiating step comprises steps of:

using signalling according to the first link protocol between the interworking unit and the network element ~~mobile services switching centre~~;

using signalling according to the second link protocol between the interworking unit and the mobile station; and

performing a conversion between the two types of signalling in the interworking unit.

31. (Currently Amended) A data transmission method ~~according to claim 28,~~ ~~characterized by~~ in a mobile communication system comprising a mobile services switching center with a first link protocol provided with a retransmission mechanism for non-transparent data transmission; a radio access network with a second

link protocol provided with a retransmission mechanism for non-transparent data transmission; and an interworking unit via which the radio access network is connected to the mobile services switching center, the method comprising steps of:

using the first link protocol between the interworking unit and the network element ~~mobile-services-switching-centre~~;

transmitting data in the frames of the first link protocol between the interworking unit and the network element;

using frame numbering in said retransmission mechanism between the interworking unit and the network element;

using the second link protocol between the interworking unit and the mobile station;

selecting the frame length and frame numbering of the first and the second link protocol identically; and

performing a conversion between the link protocols in the interworking unit.

32. (Cancelled)

33. (Currently Amended) A The method according to claim 2832, ~~characterized by~~ further comprising a step of:

selecting said first link protocol in the mobile station as a protocol version of said second link protocol by using signalling according to the second link protocol.

34. (Currently Amended) A The method according to claim 28 32, ~~e-h-a-r-a-c-t-e-r-i-z-e-d-i-n-t-h-a-t~~ wherein said adaptation to the traffic channel comprises a step of:

inserting, in the mobile station or in the interworking unit, the frames of the first link protocol as such into protocol data units of a lower protocol layer on the traffic channel of the radio access system in place of the frames of the second link protocol.

35. (Currently Amended) A The method according to claim 28 32, ~~e-h-a-r-a-c-t-e-r-i-z-e-d-i-n-t-h-a-t~~ wherein said adaptation step comprises steps of:

setting up said second link protocol between the mobile station and the interworking unit; and

transmitting the frames of the first link protocol within the second link protocol.

36. (Currently Amended) A The method according to claim 35, ~~e-h-a-r-a-c-t-e-r-i-z-e-d-i-n-t-h-a-t~~ wherein said transmission step comprises steps of:

inserting the frames of the first link protocol into the payload field of the frames of the second link protocol at the transmitting end;

transmitting the frames of the second link protocol from the transmitting end to the receiving end;

synchronizing the receiving end with the frames of the second link protocol;

extracting the frames of the first link protocol from the payload field of the frames of the second link protocol; and

operating with the extracted radio link protocol frames according to the radio link protocol and retransmission mechanism of the old radio system.

37. (Currently Amended) A mobile communication system comprising a network element ~~mobile services switching centre~~ with a first link protocol provided with a retransmission mechanism for non-transparent data transmission and employing frame numbering; a radio access network with a second link protocol provided with a retransmission mechanism for non-transparent data transmission; and an interworking unit via which the radio access network is connected to the network element ~~mobile services switching centre~~, ~~characterized in that~~ wherein the interworking unit is arranged to adapt the first link protocol to the radio access network such that the first link protocol is set up and applied from end to end between the mobile station and the network element, the frames of the first link protocol are transmitted between the network element, and the retransmission of data is controlled from end to end between the network element ~~mobile services switching centre~~ and the mobile station by means of said frame numbering.